



Smoke plume detection in the eastern United States using MODIS

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Abstract:

In the eastern United States large amounts of smoke emitted from both wildfires and prescribed fires affect the regional air quality and long-term climate and may have an impact on public health. Satellite remote sensing is an effective approach for detecting and monitoring the smoke plume. The spectral characteristics of smoke plume are measurably different from those of other cover types, such as vegetation, cloud, snow, and so on. A multi-threshold method has been developed for detecting smoke plumes with eight MODIS spectral bands based on the analysis of spectral characteristics of different cover types. A series of tests are applied to all pixels in one granule (5-min measurements) to filter out non-smoke pixels step by step with water masking. At each step, specific thresholds are utilized. The results have been validated with true color images for a number of cases from different areas and time, showing that the algorithm works well except for a few missing or incorrect identified smoke pixels.

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Resource Description

Exposure :

weather or climate related pathway by which climate change affects health

Extreme Weather Event

Extreme Weather Event: Wildfires

Geographic Feature:

resource focuses on specific type of geography

None or Unspecified

Geographic Location:

resource focuses on specific location

United States

Health Impact:

specification of health effect or disease related to climate change exposure

Health Outcome Unspecified

Climate Change and Human Health Literature Portal

Mitigation/Adaptation:

mitigation or adaptation strategy is a focus of resource

Mitigation

Model/Methodology:

type of model used or methodology development is a focus of resource

Computing System, Methodology

Resource Type:

format or standard characteristic of resource

Research Article, Research Article

Timescale:

time period studied

Time Scale Unspecified